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ABSTRACT

A study involving 65 kindergarteners was conducted to evaluate the Flying Start, a programed kit for developing learning strategies in young children considered at risk for learning disabilities. Three tests were administered, at an interval of 8 weeks, before and after the teaching period: a test of coping style, the Marbler Sorter Test of Effectiveness Motivation, and the "choices" score of the Coloured Progressive Matrices. A number of handicaps (including behavior disturbance and health handicap) became apparent in the course of contact with the children. The programed materials allowed the children to bring into play little-used abilities which permit the development of good learning strategies. Moreover, the program had sufficient flexibility to accommodate a reasonable wide range of individual differences. (Author/SBH)

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EVALUATION OF THE STOTT FLYING START LEARNING TO LEARN PROGRAM:

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by Marie J. O'Neill Ph.D.

This study was designed to evaluate a method of developing better learning strategies in young children considered at risk for learning disabilities, broadly defined as ineffective approaches to learning situations. The Flying Start, a programmed kit designed to help children learn to learn (Stott, 1970), was at the time in an experimental stage of development. A controlled, evaluative study was required as evidence of the validity of the method.

The design of the study.

The population from which the sample was taken consisted of some 450 children attending Junior and Senior Kindergartens in two schools of the Borough of North York (Toronto). The neighbourhood in which the schools were situated was classified as 'inner-city', and consisted mostly of high-density apartment blocks housing an unstable population including many one-parent and transient families and recent immigrants. The experiment was conducted during the winter season, which fortunately restricted mobility and ensured reliable school attendance.

In the January of the year the teachers of the ten Kindergarten classes had the Guide to the Child's Learning Skills explained to them and were given directions about how to complete it. The sample of 65 children were randomly allocated to Flying Start, Traditional Kindergarten and Control groups at each of the Junior and Senior Kindergarten levels. Their age range was from 4.2 to 6.1 years.

Three tests were administered, at an interval of eight weeks, before and after the teaching period. These were:

1) A test of coping style, modelled on the Conformity Score abstracted by Porteus, Barclay, Culver and Kleman (1960) from part of the Porteus Maze Test;

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11) The Marble Sorter Test of Effectiveness Motivation used by Stott and Albin (1975);

111) The "choices" score of the Coloured Progressive Matrices (Raven). This consists of the number of overt responses the child makes before making his final decision.

The experimental children were divided into eight groups of from four to six and taught for twelve twice-weekly sessions of half-an-hour over six weeks. Four groups, consisting of two at the Senior and two at the Junior Kindergarten level, were trained on the Flying Start programme, and similar groups were given a highly structured traditional Kindergarten programme. The question at issue in the experiment was whether or not the Flying Start would achieve this objective better than a well-conceived but traditional Kindergarten programme. Since I taught both groups myself no teacher-variable was involved.

The only exposure of the Control groups to the experimental procedures was in the pre- and post-testing. In effect the testing itself provided an experimental hazard because of its incidental training effect.

The chief means of assessing the transferability of the learning-to-learn effect of the Flying Start was by the diminution of faulty learning behaviours as recorded by the teachers on the GCLS. Two inter-group comparisons were made. The first was the ratio of pre/post incidence, that is to say, by how much the child's initial score, obtained before the training began, exceeded the final score obtained after the testing had finished. The second consisted in the proportion of children in each group who ended by being completely clear of faults of learning style.

Apart from the quantitative assessments of improvement in learning style, the monograph in which the study was formally reported (O'Neill 1975) contains 20 case-studies describing the progress made by a selection of the children from the Flying Start and Traditional groups. They were the counterpart of what Bricker (1970) called 'frame-by-frame analysis of the performance'. Some children showed remarkable

changes in behaviour, obvious to both the evaluator and the classroom teacher, following the third half-hour session. Teachers noted such changes at this stage for six Flying Start subjects, although one regressed. Among the Traditional case studies only one subject demonstrated this rapid change. Other children seemed to be immediately 'ready' at the first session to apply themselves and to reap the maximum benefits from the programmes. Stott would attribute such effects to different reasons for the poor learning behaviour, the expectation being that children who were able to achieve a rapid adjustment were, in the first place, suffering a less severe handicap than those whose recovery was slower.

Effect of known handicaps upon response to the Flying Start program.

It was not possible, for lack of case histories, to examine the reasons why the children in question had poor learning skills, but a number of handicaps became apparent in the course of my contact with them. Account was taken only of those of a definitive nature. They consisted of the following:

Behaviour Disturbance - maladaptation to the classroom situation resulting in the child's creating bad conseqences for himself or failing to use opportunities.

Health Handicap - known defects of a handicapping nature.

Neurological Disorder - known disorders, including lack of voluntary bladder control and incoordination.

Social deprivation - extreme neglect or known abuse.

The effect of the above was judged by the extent of improvement in learning style in response to the Flying Start programme. This rating was made independently by me as the teacher of the children during the sessions and by their regular teachers, on a six-point scale (0 - no improvement, 5 = completely successful remediation). Agreement between the two sets of ratings was close: sixteen of the twenty-three were identical and five differed by one point. The only two children for whom the ratings were seriously discrepant came from the same class-

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room, where the main activity was free play, and the teacher's philosophy was that it was difficult to assess children in the learning situation at the Junior Kindergarten level because her children were not learning, but playing. This attitude must have made it difficult for her to give effective ratings for improvement of learning style.

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Table 1

Improvement of behaviour-disturbed children

Case No.	Other known handicap	Rating of Improvement in learning style by:- Exp'ter	Teacher	Assessment of speed of improvement by Exp'ter	Extent of final improvement as assessed by Teacher on Guide
		Hyperactive			
7	-	4	4	slow but significant	significant
18	Neurological signs	2	1	poor	little
20	-	3	3	slow but significant	little
21	Health & Deprivation	5	4	slow but significant	significant
22	Health & Deprivation	3	3	poor	little
		Isolate			
2	Health	5	5	rapid	complete
6	Elective mute & deprivation	4	4	rapid	significant
8	-	3	2	poor	little
14	Deprivation	5	5	poor	little
19	Deprivation	5	4	slow but significant	complete

Table 2

Improvement of deprived children (extreme neglect or known abuse)

Case No.	Other known handicap	Rating of Improvement in learning style by:- Exp'ter.	Teacher	Assessment of speed of improvement by Exp'ter	Extent of final improvement as assessed by Teacher on Guide
3	Health	4	3	rapid	significant
5	Health, neurol, signs	5	0*	slow but significant	worse*
9	-	4	4	slow but significant	complete
6	Behav.(elective mute)	4	4	rapid	significant
14	Behav.(isolate)	5	5	rapid	complete
18	Behav.(hyperactive)	2	1	poor	little
19	Behav.(isolate)	5	4	slow but significant	complete
21	Health	5	4	slow but significant	significant
22	Health	3	3	poor	little

* See text for explanation of discrepancies.

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Table 1 analyses the speed and extent of improvement of the five children classified as hyperactive and of five 'isolates'. It is seen that the rate of progress of the former was either 'slow but significant' or poor, but two of them were significantly improved by the end of the experiment. The one who made the least progress showed signs of neurological impairment. None made no progress. The five 'isolates' did much better, only two making little progress as shown on the Guide (despite a 'five' given by the teacher for one as her impression of improvement). The improvement of two was rated as 'complete', meaning that the Guides showed them by the end of the training period to be completely clear of faulty learning behaviours.

Obviously a more extensive study, with finer assessments of behaviour disturbance, are needed before the extent of such handicaps can be confidently assessed. It must also be borne in mind that the total treatment consisted of only twelve half-hours over six weeks. If a hyperactive child makes only a little improvement over so short a period this must be reckoned as encouraging.

Table 2 shows the response of the nine children who were socially deprived to the extent of extreme neglect of known abuse. Considering that all but one had other handicaps, as a group they did surprisingly well. Three improved rapidly and four slowly but significantly. Three, including two of the latter, were completely clear of faulty learning behaviours as rated on the Guide at the end of the training period, and three showed significant improvement. Judgment has to be withheld about the deterioration of case No. 5 in view of what was said above about the teacher's attitude to Kindergarten education. The rate of improvement for this deprived group was only slightly less than that of the not-severely-deprived.

<u>The general learning-to-learn effect as measured by the GCLS</u>.

The pre/post ratios of improvement in learning style for each of the three groups are given in Table 3.

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Table 3

Relative incidence of faulty learning behaviours shown as ratios pre- and post training.

	Junior	Senior
Flying Start	2.26	3.63
Traditional	4.05	2.16
Control	2.09	1.38

Among the Senior Kindergarten children (aged 5 - 6 years) the greatest improvement, measured by remission of faulty learning behaviours, was shown by the Flying Start group. Among the Junior (aged 4 - 5 years) it was greatest among those following the Traditional Kindergarten programme. This is of interest, since the Flying Start was originally developed and field-tested with 5 - 6 year old children.

When the number of children showing a complete remission of faulty learning behaviours is taken as a criterion the results for the Flying Start group were consistently better than those for the other two groups. These are shown in Table 4.

Table 4

Numbers and percentages of children free of faulty learning behaviours by the end of the training period.

	Junior		Senior		Totals	
	No.	%	No.	%	No.	%
Flying Start	5/12	42	5/11	45	10/23	43
Traditional	3/9	33	2/11	18	5/20	25
Control	3/10	30	1/12	8	4/22	18

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It is seen that five of the eleven Senior Flying Start subjects showed a complete remission of faulty learning behaviours compared with two of the eleven Traditional and one of the twelve Control subjects.

Transfer of the learning-to-learn effect as shown by the porteus 'Conformity' score.

The mean gains as measured by the Porteus 'Conformity' score, described above, were 3.7 for the Flying Start, 0.67 for the Traditional, and 0.0 for the Control groups, the superiority of the Flying Start over each of the other groups being significant at the .05 level. Again the Senior Flying Start group showed the greatest improvement; their scores moved from the areas of disorganisation and rigidity to 'moderate flexibility', reflecting a more reasoned and reflective approach.

Comments on the Evaluation

The Flying Start is both a method and a programme. The programmed materials allow children at risk to bring into play little-used abilities which permit the development of good learning strategies. The programme moreover has sufficient flexibility to accommodate a reasonably wide range of individual differences. Under favourable conditions, these modes of attack in problem solving generalise to the classroom situation. As a result classroom behaviour is seen to be more purposeful, orderly, mature, and consequently more acceptable.

In this study the experimenter was both conducting a formative evaluation of the Flying Start programme and attempting to encourage significant changes in the subjects. Problems discovered in administering the Flying Start programme with any particular set of children had to be remedied on the spot or the new way of dealing with the materials would be put into action at the next session with different children, following Guralnick's (1973) research-service model for evaluation of learning materials. The variability of response between children of four and five years of age further complicated the process. The changes made in the course of the evaluation appear to have favoured the Senior Groups.

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From the evaluator's point of view, the Flying Start was more satisfactory to administer as a programme than was the Traditional programme. Positive changes in learning behaviours of children were observable during the course of the Flying Start programme, whereas several of the older Traditional subjects appeared at times to exhibit similar non-productive behaviour in the sessions as was seen by the teacher in the classroom. These were over-reactive children who would seek alternative activities when they had finished their set task. When alternatives for action were not available, these children would often regress to fidgetty and sometimes disruptive behaviour. Children in Flying Start groups, on the other hand, had recourse to a variety of materials and could be further deployed as helpers with slower members, thus increasing their co-operativeness and further developing their attentional and problem-solving skills.

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